

Claims

1. A capsule filling machine (100) for the production of hard gelatin capsules (C) of the type with lid (3) and body (2) containing a quantity (1) of pharmaceutical material, the machine (100) comprising a rotary turret or carousel (15) which defines at least one capsule (C) handling line (L) and on which the following are positioned, one after the other: at least one station (6) for feeding empty capsules (C); at least one opening station (20) where the capsule bodies (2) are separated from the lids (3) to form two separate rows of capsule bodies (3) and lids (2); at least one station (7) for feeding and dosing the quantities (1) of pharmaceutical material to be filled into the capsule bodies (2); and at least one station (8) for closing the capsules (C) by placing a lid (3) over each respective body (2); the machine (100) being characterised in that it further comprises means (9) for detecting and volumetrically checking the quantity (1) of pharmaceutical material filled into each capsule body (2), the detecting and checking means (9) comprising transducer means (5) for measuring the volume of said quantities (1) before they are inserted into the capsule bodies (2).
2. The machine according to claim 1, characterised in that the checking means (9) also comprise a dose checking disc (11) coupled with the carousel (15); the disc (11) having made in it at least one series of dosing chambers (4) of predetermined size (H, D), inside each of which the quantity (1) of pharmaceutical material is temporarily placed; the transducer means (5) being designed to operate in the chambers (4) to measure the volume of the quantities of pharmaceutical material before they are inserted into the respective capsule bodies (2).
3. The machine according to claim 1 or 2, characterised in that the transducer means (5) comprise elements (13) for detecting the quantities (1) of pharmaceutical material.
4. The machine according to claim 2, characterised in that each chamber (4) is designed to be closed at the bottom by reciprocating contact elements (10) moving towards and away from the carousel (15).

5. The machine according to any of the foregoing claims from 1 to 4, characterised in that the transducer means (5) are connected to a control and processing unit (18) designed to receive a signal (S) from the transducer means (5) themselves.
- 5 6. A method for producing hard gelatin capsules (C) of the type with lid (3) and body (2) containing a quantity (1) of pharmaceutical material, the method comprising the steps of; feeding closed empty capsules (C) to an opening station where the capsule bodies (2) are separated from the lids (3) to form two  
10 separate rows of capsule bodies (2) and lids (3); filling each capsule body (2) with a predetermined quantity (1) of pharmaceutical material; and closing the capsule bodies (2), filled with the quantities (1), by placing the lids (3) over the respective bodies (2); the method being characterised in that it  
15 further comprises a step of detecting and volumetrically checking the quantity (1) of pharmaceutical material, this step being performed before each quantity (1) of pharmaceutical material is inserted into the respective capsule body (2).
- 20 7. The method according to claim 6, characterised in that the detecting and checking step comprises the step of holding said quantities of pharmaceutical material inside dosing compartments or chambers (4) of predetermined volume and of measuring the height (H1) of the quantities (1) inside the chambers (4) themselves.
- 25 8. The method according to claim 7, characterised in that the measurement of the height (H1) is performed by linear transducer means (5).